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(54) DEVICES AND METHODS TO FORM A RANDOMLY ORDERED ARRAY OF MAGNETIC BEADS AND USES THEREOF

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(57) **ABSTRACT**

The invention includes devices and methods for forming random arrays of magnetic particles, arrays formed using these devices and methods, and to methods of using the arrays. The invention provides an assembly (chip) with magnetic domains that produce localized magnetic fields capable of immobilizing magnetic particles such as commercially available magnetic beads. Probe or sensor molecules can be coupled to the beads, which are then dispersed on the assembly, forming a random order array. The arrays can be used for analyzing samples, targets, and/or the interaction between samples and targets. The invention finds particular use in processes such as high-throughput genotyping and other nucleic acid hybridization-based assays.